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Young Children's Participation in a Q Study with Visual Images: Some Comments on Reliability and Validity

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Abstract: *In this study we discuss various aspects of the participation of young children as informants in research relating to their own adjustment and behavior. We ask whether it is meaningful to include young children as participants in this kind of research, and if Q methodology using visual images is a suitable research method that may give reliable and valid results. An example is given through a study of 20 children aged five. The conclusion is that this may be a suitable approach, and that there are indications that the results are both reliable and valid. However, more research is needed to explore the usefulness of Q methodology with visual images in studies of very young children.*

The aim of this article is to discuss various aspects of the participation of young children as informants in research relating to their own adjustment and behavior. As an example we present the results of a Q study of 20 children aged five. The main research aim is to explore what Norwegian five-year-olds are able to relate about their subjective experience of adjustment and behavior in everyday life. Furthermore, we ask whether it is meaningful to allow young children to participate in this kind of research, and if Q methodology using visual images is suitable in this context. Finally, we add some comments and reflections on reliability and validity issues in such a study.

Children's Early Development

Modern developmental psychology focuses to a large extent on early emotional and behavioral development in children. The probable reason for this is that today we are very well aware that development and interaction in a child's earliest years may be a forerunner or predictor of the child's later development (Stams, Juffer, & van IJzendoorn, 2002). A review of the contents pages of prestigious journals such as *Child Development* or *Developmental Psychology,* for instance, reveals that a considerable amount of research activity is linked to the youngest children (0–6 years). Among the well-researched topics are the significance of early active and sympathetic interaction between parents and small children (Trevarthen & Aitken, 2001), the development of aggression in small children (Tremblay, 2004; Tremblay et al., 2004), early temperament and attachment (Stams et al., 2002), and language (Bonica, Arnold, Fisher, Zeljo, & Yershova, 2003; Mashburn, Justice, Downer, & Pianta, 2009). Another reason for the considerable research focus targeted toward young children may be our knowledge that emotional and behavioral problems are fairly widespread among young children. There is relatively broad agreement in the research literature that approximately 10 to 20% of children between the ages of four to ten experience symptoms of mental disorders at a level that affects their daily activities and that 4 to 7% have mental afflictions indicating that they need professional help (Nærde & Neumer, 2003). Mental afflictions and difficulties, for example, hyper-activity and attention problems, can also be observed even among children who are younger than four (Mathiesen & Sanson, 2000).

Methodological Challenges

In studies of emotion and behavior among young children, it is often the parents or staff in daycare centers or schools who supply the data, for example by completing questionnaires (e.g., Bonica et al., 2003; Côté, Borge, Geoffroy, Rutter, & Tremblay, 2008; Stene-Larsen, Borge, & Vollrath, 2009). Questionnaires that are often used are the *Child Behavior Checklist* (Nøvik, 1999), the *Strengths and Difficulties Questionnaire* (Heyerdahl, 2003; Obel et al., 2004) or the *Ages and Stages Questionnaire* (Richter & Janson, 2007). Some studies also include tests and assessment tasks in which the children themselves participate, for example, in the case of language development (Bonica et al., 2003). Nevertheless, it is relatively uncommon for children themselves to contribute data on their own psychosocial adjustment and behavior. However, there are some exceptions such as *The Berkeley Puppet Interview* (BPI) (Arseneault, Kim-Cohen, Taylor, Caspi, & Moffitt, 2005; Measelle, Ablow, Cowan, & Cowan, 1998). The BPI scale measures a child's self-perceptions of his/her academic competence, achievement motivation, social competence, peer acceptance, depression/anxiety, and aggression/hostility. However, BPI has been constructed from the outlook of the researcher and is less concerned with the child's depictions of his/her own subjective topics. Compared to what we

could see in a Q study, the categories (scales) in the BPI are defined *a priori*, and are not altered in any way to adjust to the subjective themes brought out by the children.

Ethical and Epistemological Reasons for Including Children's Perspectives in Research

Traditional developmental psychology has been criticized for being more concerned about valid, reliable scales and variables and academic status than about the children themselves (Greene, 2006). Moreover, developmental psychology has been criticized for not fully taking into account the fact that children are active social agents who construct their own subjective existences (Emond, 2006; Greene, 2006). The right of children to express themselves and be heard is stressed several times in the UN Convention on the Rights of the Child (United Nations, 1989). However, in studies of children´s adjustment and development, the researcher is often considered the "expert on children," and children's ideas of research questions and themes are never considered (Woodhead & Faulkner, 2008). An important principle in Q methodology is that the individual is the expert on his/her own subjectivity (Brown, 1980), and we therefore set out to explore whether this type of research methodology is suited in a study of five-year-old children's adjustment and behavior.

Q Methodology

In the study reported here we attempt to meet some of the challenges associated with studies of very young children by using Q methodology. Five-year-olds in Norway do not attend school, although most of them go to daycare centers. The formal reading training starts in school at age six. This means that the traditional questionnaire would be impossible for most children to understand. Long qualitative interviews can also be demanding from a cognitive point of view, partly because they are dependent on the interview subject possessing good language abilities. Our study also treats sensitive and emotional topics which may pose emotional challenges for some children. As mentioned above, a relatively large proportion of children in this age-group have symptoms of mental problems or afflictions that either affect their daily activities or are so comprehensive that they need professional help (Nærde & Neumer, 2003). In order to treat children in a considerate manner and take into account their cognitive development, we have chosen to employ Q methodology using visual images. Q methodology has also been previously used in studies of children, both with verbal (Sickler et al., 2006) and visual Q items or cards (Stephenson, 1980; Taylor, Delprato, & Knapp, 1994). At least two earlier studies have concluded that children as young as three to four years of age are able to participate in Q studies with visual Q items (Stephenson, 1980; Taylor, Delprato, & Knapp, 1994) and Q sorting has been highlighted as a considerate and user-focused way of collecting sensitive data (Ellingsen, Størksen, & Stephens, 2010).

Aims and Research Questions

The aim of this study is to discover what Norwegian five-year-olds are able to express about their emotional adjustment and behavior in everyday life. Results from a sub-sample of a larger study will be presented as an example. Furthermore, we ask whether it is meaningful to allow small children to participate in this kind of research, and if Q methodology using visual images is suitable in this context. Finally, we add some comments and reflections on reliability and validity issues in such a study.

Method

The data presented in this article are derived from a more comprehensive study in which the focus was on mental health, experiences and behavior among children who have undergone a divorce (or family breakdown in general). In the main study, data were collected from 37 children, 17 children who had experienced divorce and 20 children who had not. In this article, *only* the results derived from the 20 children who had *not* experienced divorce are given.

Q methodology was developed in order to study and reveal various aspects of human subjectivity (Stephenson, 1953). As readers of this journal know, the results of a Q-factor analysis reveal individuals who share a subjective viewpoint, for example, in that they express similar feelings, interpretations, preferences or attitudes. In this study, the results reveal groups of children who express similar experiences and feelings about their own emotional adjustment and behavior in everyday life.

The Stages of a Q Study

We often talk about the specific stages involved in a Q study. These stages have been described by Steven Brown and a number of others in a fairly similar manner (Brown, 1980; Previte, Pini, & Haslam-McKenzie, 2007; Stenner, Watts, & Worrell, 2008; van Exel & de Graaf, 2005). Here we rely on the description given by van Exel and de Graaf of the five stages including: (1) definition of concourse, (2) development of a Q sample, (3) definition of P set, (4) Q sorting, and (5) analysis and interpretation. This last stage involves not only interpretation, but also understanding of the results that have emerged (Stephenson, 1983, p. 81). In the following, we will explain the procedure adopted in conducting this study of five-year-olds on the basis of these five stages. Stage (1) and (2) will be combined in the presentation.

Defining Concourse and Developing the Q Sample

Concourse refers to the flow of communication on a given topic and can be gathered through interviews, the media, specialist literature, or everyday conversations, among other sources. Conducting an interview on mental health with a five-year-old child poses a number of practical and ethical problems. We were also interested in children's experiences of family breakdown (noting, however, that we report here on the subset of children who were not identified as coming from families that had experienced divorce), which can be a difficult and sensitive topic for some children. Therefore, we did not conduct interviews with the children in this study, but instead the concourse was defined on the basis of both studies of older children who had experienced a family breakdown (e.g. Amato, 2001; Amato & Keith, 1991), and of studies of small children in which the parents or staff in daycare centers or schools were the informants (see Leon, 2003). Some statements were also derived from theoretical works on the child's adjustment after a family breakdown (Amato, 2000) and attachment theory (see Bretherton, 1992).

Two key dimensions of children's reactions to divorce were identified in research and the literature. These can also be found in research and literature on children in general. We know that children's adjustment problems can be both *relational* (inter-individual), such as attachment problems (Bretherton, 1992), and *individual* (intra- individual), such as emotional problems (Nærde & Neumer, 2003). Furthermore, we know that children may *be troubled* by various mental- health problems, or they can experience *good adjustment* with few problems. A total of 31 statements were constructed or identified describing feelings and experiences of young children. In order to adjust the number of statements to an appropriate amount for five-year-olds, we decided to limit the Q sample to 20 statements. To retain as many as possible of the topics covered by the concourse, we used a Fisher balanced-block design to structure the Q sample (Stephenson, 1993/1994). A 2x2 cross table containing the two dimensions mentioned above—(inter-individual versus intra-individual and good adjustment versus adjustment problems)—provided four categories. We chose five representative statements for each category, thereby achieving a total of 20 statements in the Q sample, as shown in Table 1. A professional designer developed visual material on the basis of the 20 statements, so that each statement was converted to a visual image printed on an individual card. Thus, each card depicted the essence of the emotion (from the statements) as revealed in a characteristic behavior exhibited by a person feeling that emotion.

The cards and the sorting matrix were piloted with five children aged five. This resulted in some minor adjustments to cards that contained unnecessary detail or in which the content was unclear in other ways. Nonetheless, some people may still contend that this type of illustration may mean different things to different individuals, and that different individuals may respond in varying ways on this basis. One of the strengths of Q methodology is that this kind of ambiguity can be exploited in such a way that new viewpoints and opinions can be discovered. This can be done by conducting follow-up interviews with the informants (van Exel & de Graaf, 2005). Hence, Q methodology shares many similarities with traditional qualitative research methods. Follow-up interviews were not carried out in this study, but comments made by the children during the sorting process were recorded. It must be stressed that the children in this study were only presented with the visual images, not the verbal statements. As a result, the verbal statements will be subsidiary in the interpretation, while the visual configurations in the factors will be important.

Table 1: Fisher Balanced-Block Design with Statements for the Final Q sample

	Inter-individual	***Intra-individual***
Well-adjusted	I feel close to my mother. I feel close to my father. Daycare personnel help and support me. I have many friends in daycare. My extended family loves me.	I have fun in daycare. I believe my parents collaborate well. I am happy and satisfied. I enjoy food. I play and have fun.
Adjustment problems	There is a lot of conflict in my house. My mother is sad and I have to comfort her. My father is sad and I have to comfort him. I feel lonely / isolated from others. I often end up in conflict with other children.	I am anxious or scared or afraid. I am noisy. It is my fault. I feel angry. I am sad and I cry.

Also the categories of the Fisher block design are subsidiary to our interpretation of the factors, and in this phase we are uninterested in the properties of the Q sample (Brown, 1980, p. 191). Some statements in our study were hard to place under a specific category, and this might also be a reason to set the categories of the Fisher block design aside in the interpretation. One example of this may be "I believe my parents collaborate well." The aspect of "belief" might qualify this statement to be categorized under "intra-individual," whilst the aspect of "collaboration" (among parents) might qualify it to be categorized under "inter-individual." However, as mentioned, the categories in the Fisher block design are used only to spread the statements reasonably evenly, and do not relate to the results of the study. The meaning of each image in the factors is always seen in relation to its placement with all the other cards in the sorting matrix.

Selection of Participants: P Set

A total of 37 children with an average age of 5.2 years participated in the study. Of these, 17 children had experienced a breakdown of the family relationship between their biological parents and 20 children still lived together with both biological parents. Only analyses from the 20 children still living with both parents are reported in this article. Results from the full set are reported elsewhere (Størksen, Thorsen, Øverland, & Brown, forthcoming).

The children were recruited from the 10 daycare centers in southwestern Norway that collaborated in this study. Children in their last year at the daycare center (preschool stage) were invited to participate in the study. We contacted the boards of the daycare centers in the recruitment area, gave them information and invited them to participate. The daycare centers included in the study were located in small towns as well as more rural areas. There are no special reasons to believe that the daycare centers that took part are very different in any way from other Norwegian daycare centers. The children were recruited by the daycare-center staff. They informed the parents of all five-year- olds in the study both verbally, and in an information letter. Parents who were willing to allow their child to participate signed a consent form and delivered it to the daycare center. A time and place at the daycare center for data collection was then agreed on. When we had reached a sufficient number of children in the group that had not experienced a breakdown in the family relationship, we continued the recruitment process in the remaining daycare centers by inviting only children and families who had experienced such a breakdown.

Q Sorting with Children

All the children who participated in the study were asked if they were comfortable being with us in a separate room in the daycare center where we wanted them to help us find out how children in daycare centers feel. First of all, we spent a little time getting to know each other, for example, by talking together or drawing. To ensure that the children who took part in the study were familiar with basic feelings, we created a routine whereby we asked the children to demonstrate with their facial expression feelings such as being happy, angry, upset, sad or frightened. Even though there were few children in the study who could explain at a more abstract level what feelings are, all the children could recognize and mime these basic feelings. We then introduced the cards to the children, asking if it was all right for them that we played or pretended that the main figure with the androgynous appearance was the child in question. We also asked the children, "If we pretend that this is you, what feelings do you think you have in this picture?" We covered all of the 20 randomly numbered cards in order from 1 to 20. Even though some of the children had a tendency to get preoccupied with random details on the cards (e.g., the number of the card or the toys in the illustration), they were generally able to express the essence of the illustrations after they were helped to focus on the feelings expressed rather than on the details of the illustrations.

Next, we distributed the cards at random on the table. The children were then asked to sort the cards into the Q sort matrix with a ranking from −3 to +3 in a semi-normal distribution. The Q sorting was conducted in the following manner: We explained the purpose of the two "smiley-faces" in the matrix. The cards that were similar to what the child usually felt were to be placed under the one that was nodding, while the cards that were not similar were to be placed under the one shaking its head. The child was then asked to pick the two cards out of the 20 that most closely resembled the feelings the child usually had. These two cards were placed on the (+3) squares in the matrix. Subsequently, the child was asked to pick the two cards that least resembled the feelings the child usually had. These two cards were placed on the (−3) squares in the matrix. We then continued from side to side towards the centre. By asking which card was most similar or dissimilar of those left on the table, we maintained the scaling in the matrix since the most extreme cards had already been removed. In the end, we were left with four cards that the child had not particularly responded to and that therefore did not appear to have any great importance for the child. These cards were placed in the (0) column in the matrix. This way of conducting a Q sort has been employed in earlier studies with children (Stephenson, 1980; Taylor, Delprato, & Knapp, 1994). The technique enabled the five-year-old children in the study to carry out the relatively complex cognitive task of sorting 20 cards into seven columns. We set aside ample time for the card sorting process with each individual child, and the sorting lasted from about half an hour to an hour, depending on how much the individual child had on his/her mind. We recorded the children's comments while they were carrying out the Q sort. These were utilized in the interpretation of the results.

Analysis and Interpretation

The children's statements and comments were transcribed. We also noted our clinical experiences in the encounter with the individual child. The 20 sorts from the children who had not experienced a family breakdown were entered into the PQMethod program (Schmolck, 2002). Interpretation of the factors was based on abduction theory (Curt, 1994; Reichertz, 2004; Stephenson, 1961) with the basis for interpretation being (1) factor scores, that is, typical scores for the statements on a given factor, (2) "distinguishing" statements or expressions that had a different statistical value for the factors, (3) the visual appearance or configuration of each factor, and (4) the children's statements and comments.

Ethical Reflections and Assessments

The study was approved by the Norwegian Social Science Data Services (NSD) and the Regional Committees for Medical and Health Research Ethics (REK). The data collection was conducted on an individual basis with each child, and informed consent was obtained from both parents of the children in the study. The parents were informed of their right to withdraw from the study without having to give any reason. The children themselves were given information verbally when we started the Q sort, and were asked if they were comfortable participating. Our idea was that the Q sorting of visual images would be a gentle way of collecting data from children, and our general impression seems to confirm this. Time was allocated after the Q sort to follow up with any child who appeared to need this. All information given in the study was treated as confidential. The real names of the children were stored on a code sheet that was locked away separately from the data. In agreement with REK, we decided to contact the parents of children who expressed an excessive number of difficult feelings in

order to make sure they were aware of the situation. A thorough discussion of ethical reflections and considerations for this study is reported elsewhere (Thorsen & Størksen, 2010).

Results

Various factor solutions with "centroid factor analysis" and "judgmental rotation" as well as "principal component analysis" (PCA) and "varimax rotation" were tried. The latter analysis with a two-factor solution appeared to give the clearest results. The correlation between the factors was r = 0.16. The explained variance by the two factors was 67%. A standard pre-flagging procedure was used ($p<0.05$). All the children have a significant loading on one of the two factors. Eighteen children define Factor 1, while two children define Factor 2.

Tables 2 and 3 show the z-score and ranking (factor score) for each statement. In our case it was also important to view the factor scores in the form of sorted factor matrixes with visual images. These are shown in Appendices 1 and 2. The reason for this is that the children were only shown the visual images and not the written statements.

Factor 1

Description of Factor 1. At the positive end of the factor are statements that have the (+3) value: "I am happy and satisfied" and "I have fun in daycare." Statements under (+2) are "I enjoy food," "I feel close to my mother" and "My extended family loves me." The statements provide a general picture of the child who feels he/she enjoys life both at home and in daycare. The statements placed under (+1) back up this view: "I have many friends in daycare," "I play and have fun" and "I feel close to my father."

Table 2: Z-scores and Ranking (factor scores) for Factor 1

		Factor 1	
No.	***Statement/pictures***	***z-score***	***Rank***
7	I am happy and satisfied.	1.408	3
6	I have fun in daycare.	1.182	3
1	I enjoy food.	1.131	2
14	I feel close to my mother.	1.085	2
4	My extended family loves me.	1.020	2
13	I have many friends in daycare.	1.002	1
15	I play and have fun.	0.846	1
18	I feel close to my father.	0.839	1
8	I believe my parents collaborate well.	0.797	0
20	My mother is sad and I have to comfort her.	–0.386	0
3	My father is sad and I have to comfort him.	–0.460	0
12	Daycare personnel help and support me.	–0.503	0
9	I feel lonely / isolated from others.	–0.702	–1
5	I am anxious/scared/afraid.	–0.756	–1
10	I am sad and cry.	–0.793	–1
17	There is a lot of conflict at home.	–0.829	–2
2	It is my fault.	–0.932	–2
16	I feel angry.	–1.267	–2
11	I am noisy.	–1.307	–3
19	I often end up in conflict with other children.	–1.374	–3

On the negative side of the matrix for the factor (–3) we find statements such as "I often end up in conflict with other children" and "I am noisy." Statements with a (–2) value are "I feel angry," "It is my fault" and "There is a lot of conflict at home." Under (–1) the children have placed "I am sad and cry," "I am anxious/scared/afraid" and "I feel lonely/isolated from others." When the whole factor is considered as one, a picture emerges of children who are thriving both at home and in daycare, and there seems to be little conflict around them. Factor 1 seems to be characterized by feelings of happiness and harmony.

Visual configuration of Factor 1. William Stephenson was very intent on assigning enough time to the interpretation process or to "see *more, hear more, feel more"* (Stephenson, 1983, p. 103) before drawing any conclusions. To acquire an even more complex picture of Factor 1, we sorted all 20 cards back into the matrix in accordance with the factor scores for this factor (see Appendix 1). The visual presentation appears to strengthen the belief that the children on this factor mainly had good feelings and close and good relationships and that they did not normally experience conflict-filled relationships or difficult feelings.

Children's comments linked to Factor 1. We also studied the transcripts of the comments made by the children who loaded on Factor 1. Even though most of the children's comments are short and provide little new information, some individual statements promoted a richer picture of the factor. Many children distanced themselves from cards 11 and 19, in which the main figure is angry and aggressive and throws toys around—either when alone or together with other children. It is difficult to say whether this is idealization because the children know that such behavior is unacceptable or whether this is what they really feel. One of the children on this factor spontaneously stressed that this is important to him: "I have never become angry. I never become angry!"

One girl said spontaneously at the start of the card sorting session that she thinks mainly of good feelings when there is talk of feelings. The interviewer asked, "Do you know what feelings are? What kinds of feelings can we have?" The girl answered, "Happy (or good) feelings." The interviewer probed, "How do they feel then?" to which the child responded, "Good and kind." Several children were occupied with good feelings in the family. When asked, "Are any of the other cards here similar?" a child replied after thinking and looking, "They're all happy in the family" (pointing to card).

Our notes from the interview situations indicated that the majority of children thought that things had gone well and that they were satisfied with their own efforts:

> Afterwards she agrees that mostly she usually has good feelings, and she feels that she has done this in the right way. She draws for a while when she's still with me, and then says she wants to go back to the others.

Factor 2

Description of Factor 2. Children who define Factor 2 tell a somewhat different story. The statements that most closely describe how they are feeling are more mixed. Under (+3) we find "I play and have fun" and "I have fun in the daycare." Under (+2) the children have placed "It is my fault" (often understood by the children as "I get scolded"), "I am sad and cry," and "My extended family loves me." Moreover, under (+1) we find "I often end up in conflict with other children." On the basis of the oral statements, it appears as if the factor describes children who may be thriving, but who also experience being upset, feeling guilty and ending up in conflicts. At the negative end of the factor we can observe how the children describe things that do not closely resemble their situation. Under value (–3), they have placed "I have many friends in daycare" and "Daycare personnel help and support me." Statements under (–2) are "I am noisy," "I feel lonely/isolated from others" and "There is a lot of conflict in my house." Furthermore, under (–1) we find "I am happy and satisfied," "I am anxious/scared/afraid" and "I feel angry." Even though the children who define Factor 2 do not regard themselves as particularly noisy, angry or lonely or experience a lot of conflict at home, they are not completely content. Their relationships with the children in daycare are to some extent characterized by conflict, and they may not receive much support or comforting from the daycare staff either. The feeling that seems to characterize Factor 2 is mixed and it seems like there is an undertone of sadness.

Table 3: Z-score and Ranking (factor score) for Factor 2

		Factor 2	
No.	***Statement/pictures***	***z-score***	***Rank***
15	I play and have fun.	1.652	3
6	I have fun in daycare.	1.480	3
2	It is my fault.	1.425	2
10	I am sad and cry.	1.253	2
4	My extended family loves me.	0.798	2
19	I often end up in conflict with other children.	0.282	1
14	I feel close to my mother.	0.172	1
3	My father is sad and I have to comfort him.	0.172	1
20	My mother is sad and I have to comfort her.	0.172	0
1	I enjoy food.	0.000	0
18	I feel close to my father.	0.000	0
8	I believe my parents collaborate well.	0.000	0
16	I feel angry.	–0.172	–1
5	I am anxious/scared/afraid.	–0.344	–1
7	I am happy and satisfied.	–0.454	–1
17	There is a lot of conflict in my house.	–0.571	–2
9	I feel lonely / isolated from others.	–1.081	–2
11	I am noisy.	–1.253	–2
12	Daycare personnel help and support me.	–1.652	–3
13	I have many friends in daycare.	–1.879	–3

Visual configuration of Factor 2. Also in the case of Factor 2, we sorted the cards back into the matrix on the basis of the factor scores for this factor (see Appendix 2). Through the abduction process of the study, it then became clear that weak relationships seemed to be a plausible explanation for the Q-sort patterns among children associated with this factor. The children who load on this factor have chosen many cards in which the main figure is alone and gives the impression of both enjoying himself/herself (6 and 15) and being upset (10). Out of the five relationship cards placed under (+1) and (+2), two cards (4 and 14) link a positive aspect to the relationship, while three cards (2, 19 and 3) reveal more problematic aspects of the relationship. The children certainly express that there is no conflict at home (this card is placed under –2), but the sorting as a whole gives the impression that the parents are of less importance. The card depicting the grandparents (or the extended family) is placed under +2, and these persons appear to be more important than the parents. A card with less positive relationships is placed under the +1 value, namely 19: "I often end up in conflict with other children." Two cards with positive relationships are placed on the minus-side, i.e., "I have many friends in daycare" and "Daycare personnel help and support me." The undertone of sadness described earlier may therefore be associated with weak or deficient relationships.

Children's comments linked to Factor 2. Reviewing transcripts of the two children who loaded high on Factor 2, it emerged that both of these had older and younger (baby) siblings at home. In the case of these children, the cards dealing with closeness to the mother (14) and the father (18) were placed in a more or less neutral area. The situation at home with many siblings was possibly one of the reasons why these cards did not have a more prominent place in the Q sorts of the children who define Factor 2. Perhaps these children are more often together with their mother and father in a wider family setting and not in a one- on-one situation as shown in the illustrations. Only two children defined Factor 2. Generally, we wish to see more than two defining Q sorts on a factor to ensure that we have a stable factor.

The transcripts also include statements that reveal the conflict in the children's daily lives. One of the children confirms having some sad and painful feelings, as shown by the following exchange:

Interviewer (I): Let's look at the cards then. On that side the cards show how you're feeling. Someone who's very happy, and then there's . . .

Child (C): Yes, I've been upset today. I: Do you feel upset sometimes?

C: Yes

Even though the children admit a number of difficult things and painful feelings, they generally say that participating in the study is fine. When the interviewer asked, "How did you experience talking about feelings?" the child replied, "It was good: it was great!"

Statements Distinguishing the Two Factors

The differences between the factors emerge clearly when we consider examples of distinguishing statements, shown in Table 4.

Table 4: Distinguishing Statements

Statement		***Factor 1***		***Factor 2***	
		Rank and z-score		Rank and z-score	
7	I am happy and satisfied.	3	1.41	−1	−0.45
1	I enjoy food.	2	1.13	0	0.00
14	I feel close to my mother.	2	1.08	1	0.17
13	I have many friends in daycare.	1	1.00	−3	−1.88
12	Daycare personnel help and support me.	0	−0.50	−3	−1.65
10	I am sad and cry.	−1	−0.79	2	1.25
2	It is my fault.	−2	−0.93	2	1.42
19	I often end up in conflict with other children.	−3	−1.37	1	0.28

Compared with the children under Factor 1, the children under Factor 2 clearly indicate that they do not have many friends in the daycare and that they may be in conflict with other children, while at the same time they feel guilty or that they are scolded, or are upset, and they feel sad.

Discussion

In this study we wanted to explore what Norwegian five-year-olds can express regarding their own emotional adjustment and behavior in their everyday life. As mentioned in the introduction, there is a relatively broad agreement in the research literature that 10 to 20% of children have a varying degree of symptoms of mental health disorders (Nærde & Neumer, 2003). This also means that the majority of children in fact have few such symptoms and few adjustment problems. The findings of this study appear to be in line with these figures. In this non-random study, more the children load most strongly on Factor 1, thus confirming that they are happy and satisfied in their daily lives and that they generally enjoy secure and good relationships. Two children load most on Factor 2. At first glance this factor may appear more difficult to interpret. It did not directly agree with any known diagnosis or clear symptom patterns in children, such as the widely used distinction between *emotional problems* and *behavioral problems* (e.g., in Nærde & Neumer, 2003). In fact, the viewpoint that was revealed in Factor 2 seemed to be characterized by many kinds of feelings or states such as sadness, anger or conflict, joy, and a feeling of being scolded. However, by considering the visual appearance of the factor, it emerged that these children—in addition to expressing a number of mixed feelings—might perhaps be experiencing weak or deficient relationships in their lives. They may feel somewhat neglected by their mother (compared with other children on Factor 1) and this may be partly due to a family situation with many younger and older siblings. Attachment theory postulates that the attachment (the strong ties that are formed at an early age) between the baby and caregiver forms the foundation of later relationships, although the attachment pattern in the individual can change as a result of major life events. Based on the given criteria, an assessment can be made of whether the individual has *secure attachment*, *insecure avoidant attachment* or *anxious ambivalent attachment* (Bretherton, 1992). It is possible that the two children on Factor 2 may have a somewhat more insecure attachment pattern than the other children.

Revealing Young Children's Subjective Feelings with Visual Images We also wished to examine whether it may be meaningful to allow children so young to participate in this type of research and whether Q methodology with visual images is a suitable method. Was it possible to get access to such young children's subjective feelings through a Q study with visual images? Even though it was difficult for the majority of the children to explain what "feelings" are on an abstract level, a general feature of all the children participating in the study was that they could understand and explain the most central feelings such as being angry, happy, frightened or upset. They expressed this verbally or by showing these feelings through their facial expressions. This fits well with modern developmental psychology, in which several experts stress that experience and expressions of affective states arise long before verbal language. For example, Stern (2003) stresses that children experience and share hedonic tones long before the verbal self emerges. Intersubjectivity and affective engagement between the baby and the caregiver depend precisely on the ability of the two to share and communicate similar feelings or feeling tones with each other (Stern, 2003). Moreover, research literature informs us that from the age of three, children can express a range of human feelings and can distinguish between them (Lewis, 2000) and that they can express their own and others' feelings almost as soon as they start talking (Harris, 2000). This realization helps confirm that fairly young children have a good knowledge of feelings and that a study of feelings and subjective experiences among five-year-old children is relevant and important. So that we as researchers could understand these subjective experiences and feelings that the children expressed, it was necessary to combine factor scores, the visual appearance of factors, distinguishing statements and comments made by the children.

Our general impression was that the five-year-olds who took part in this study thought that the Q sort with visual images was an enjoyable and exciting challenge. The children became involved and appeared to give meaningful information about their experiences in everyday life. Nevertheless, the method represented a cognitive challenge for some of the children. Some also experienced the cards as being emotionally demanding and confrontational, especially if the cards touched on their own experiences. However, based on our experience we believe that it would have been more challenging if we had relied solely on an oral interview or conversation. With a focus on card sorting as the point of departure, the children were given the opportunity to maintain a measure of distance from the topics presented.

Some Comments on Reliability

In quantitative research, reliability often refers to whether a scale can be trusted to give consistent, stable, and precise measures of a variable (e.g., Kerlinger, 1988). In Q methodology, however, we do not seek to measure anything, we simply study subjectivity. Still, we would expect quite high stability (on the individual level) between the Q sorts of a group of people at two time points if they received the same Q sample with the same instructions under stable conditions (Brown, 1980, pp. 289–290). In the present study, we did not have ethical approval from REK to conduct such "test-retest" Q sorts with the children. (In the aftermath of the study, we see the importance of seeking such allowance for some of our future Q studies.) However, in the full study (with 37 children) a pair of siblings was included in the P set. These children had experienced the same family history, and thus we expected the correspondence between the two children to be high. As it turned out there was actually a quite high correspondence between them, with a correlation analysis showing $r=.68$, ($p<.001$). The correlation or correspondence between the siblings was not perfect, but still quite high and highly significant. However, we did not expect a perfect correlation between the two children, because individual subjective experiences and feelings—even related to the same situation—will always differ somewhat. We did, however, expect a relatively high resemblance, since the children had experienced the same family breakdown. It is very unlikely that the high correlation between the two children resulted from chance (see significance level), and this strengthens our beliefs that the children sorted the cards according to their experiences and not completely arbitrarily. This is one of several indications of reliability in the study.

There is at least one other instrument through which children supply data on their own adjustment, namely the Berkeley Puppet Interview (BPI) (Arseneault et al., 2005; Measelle et al., 1998). A study showed high reliability scores (typically above .70) for this instrument for 4½- and 7½-year-old children (Measelle, et al., 1998). In this study the correspondence between the children and the different adults (parent or teacher) was just as strong—or even stronger—than the correspondence between the different adults' reports of the children's adjustment. The study by Measelle et al. (1998) therefore

also gives quite good indications that even very young children can supply reliable information of their own adjustment. In our study we did not have Q sorts from the children's parents or teachers with adequate conditions of instruction that would match the children's Q sorts (which we recommend being done in future studies). If we had such data, we could have run correlation analyses between children and adults to check for correspondence or correlations between each pair of child/adult. Or alternatively, we could have run all Q sorts (from children and adults) in a common Q-factor analysis to see if the adult's judgment of each child ended up on the same factor as the corresponding child's Q sort. A similar analysis is being done in another Norwegian study of foster children, foster parents, and biological parents (Ellingsen, Stephens, & Størksen, submitted). Even if we do not have Q sorts from parents or teachers, we did have some dialog with both groups related to the present study, and this dialog generally seemed to confirm the children's Q sorts. When it came to parents that we were in contact with, we were allowed (by REK) to discuss the actual way the children had responded. The parents generally seemed to recognize their children well through their Q sorts, and in no cases were they very surprised by their children's responses. These experiences together with other clinical observations that we made in our study, strengthen our belief that the children sorted the cards in a reliable manner and in accordance with their current situation and emotional adjustment. However, we can never know if some of the children felt the need to conceal difficult feelings from us. Still, this uncertainty may also apply to studies including participants in other age groups.

We could also talk about reliability of the *factors* in a Q study. We often refer to this as "the stability of a factor." The question then is: Would we get a fairly similar factor if we conducted a second Q sort session with the same Q sample, P set and condition of instruction with stable conditions? As much as we expect a person to produce a fairly similar second Q sort with stable conditions, we also strongly expect a similar factor to emerge among a group of people at their second Q sort session. As Brown puts it: "The composite reliability of a factor is therefore greater than the reliabilities of the persons composing it" (Brown, 1980, p. 245).

As mentioned previously we did not conduct such "test-retest" Q sorts with the children. However, the results reported here are based on a sub P set of the larger day-care study that we conducted. In the total P set (including both children of divorce and children living with both parents) the Q factor analysis resulted in a three factor solution (Størksen et al., submitted). In this study we applied a stricter significance level (compared to the present study) for determining the defining Q sorts ($p<.01$). Still, there seemed to be high correspondence between Factor $1_{(1)}$ in the present study (with the sub P set) and Factor $1_{(2)}$ in the larger study (with the full P set), and an analysis in SPSS revealed a correlation between these factors of $r=.86$, ($p<.001$).

Some would argue that this strong correlation is only what should be expected, since both the sub P set and the full P set contain some of the same Q sorts (from children still living with both parents). Still, we argue that the high correlation need not be so obvious or expected when we consider the different analyses (e.g., three factor solution and significance level of $p<.01$ in full P set) and different demographic groups in the two P sets (e.g., full P set contains also children of divorce). *Statistically,* the stability of Factor $1_{(1\&2)}$ might be explained by the relatively high number of children defining this factor in both studies. *Substantially,* the results from our studies give us an indication that the viewpoint revealed in Factor $1_{(1\&2)}$ may be a view that exists among young children independently of Q sample and P set. Thomas and Baas (1992/1993) reveal convincing results from two "tandem-studies" with different Q samples (and structures) and P sets in each study. The factors or the "schematics" from each pair of tandem-studies contain very similar viewpoints despite various differences in the studies. Thus, there seems to be some indications that the viewpoints that are detected in Q studies in many cases may be quite common, and thus the term "reliable schematics" is introduced (Thomas & Baas, 1992/1993).

Still, as mentioned previously, for factors to be stable and contain such "reliable schematics" a certain number of defining Q sorts is needed (Brown, 1980, p. 45). In our two studies we also tried to run a correlation analysis between Factor $2_{(1)}$ and Factor $2_{(2)}$. These factors were defined by far fewer Q sorts (2 and 4), and the analysis revealed a somewhat weak correlation between the two of $r=.32$, ($p=.09$). It is also important to note that in the study with the full P set a three-factor solution was chosen, which may have influenced the content of Factor $2_{(2)}$. A final point may be that children might well agree upon the view of how they feel when they are happy and content (Factor $1_{(1\&2)}$), but a feeling of distress and discomfort may not be so uniform between children, and may rather be more idiosyncratic for each child (Factor $2_{(1\&2)}$ and Factor $3_{(2)}$).

Some Comments on Validity

In quantitative research traditions, validity refers to whether a scale or a measure truly corresponds with the variable at issue (Cozby, 1989). For example, it is important that a scale of anxiety actually measures levels of anxiety and not something different. In Q, however, no psychological variable is measured (Stephenson, 1953, p. 5), but subjectivity is studied, discovered and explored. Thus, there is no external criterion a researcher can use to compare and to validate each person's Q sort. Furthermore, a general principle in Q methodology is that the individual is the expert on his/her own subjectivity (Brown, 1980), and therefore there is no "right or wrong." In Q, "Operant responses, rather than operational definitions, are at issue. The concept of validity has very little status since there is no outside criterion for a person's own point of view" (Brown, 1980, pp. 174–175). Still, some might argue that the visual images included in this study are ambiguous, and that we never know what we are "measuring." Again, we are not measuring anything, but simply studying, exploring and discovering children's subjective views. It is still true that different children may understand different cards differently. This is in line with the general principles of Q, where the interest lies in the subjects understanding and operations related to the statements (here, the visual images), and not on the researchers' *a priori* definition of meaning of each statement (Brown, 1980, p. 191). In this way validity in a Q study in many ways relies upon the researcher's ability to grasp the participants' viewpoints. The challenge consists of understanding the way the participants have understood and sorted (operated on) the cards. In this study, this has been done on the basis of factor scores, distinguishing statements, the visual appearance of each factor, and the children's statements and comments.

As demonstrated in this study, new and unexpected child viewpoints (Factor 2) were discovered. We also discovered new aspects of young children's feelings, experience and behavior related to their everyday life at home and in daycare. A child of divorce from the full P set made a comment related to card no. 8 that in short contained "I never see my parents together. One parent delivers me to daycare, and then the other picks me up." This made us realize that some young children of divorce actually live in two very separate worlds, and that the daycare center is actually the only place where they all have some connection (although the parents never meet each other even in this arena). This way the Q visual images stimulated the children to make comments that gave new insight to us as researchers on aspects of children's lives that we were not so conscious of before the study. We were allowed to make new discoveries of their subjective experiences and feelings.

Summary

Most children in this study ended up on a factor that indicated that they were well-adapted, expressing little provocative behavior or emotional afflictions. Factor 1 also appeared to convey that the children enjoyed a number of good relationships. Only two children defined Factor 2. Even though these children sorted the cards in a way that indicates that they enjoy themselves and have fun in daycare, they also report a feeling of guilt or being scolded and that they can be upset and cry, as well as being in conflict with other children. To understand the two factors, it was essential to examine their visual appearance and read the transcripts of the taped sessions with the children. Different and meaningful nuances emerged through the use of Q method with visual images. Our experiences indicate that it may be fruitful to explore this approach as one of a number of possible methods of studying young children. There are indications that a study applying Q methodology with visual images gives both reliable and valid results, and may give new discoveries of children's views. Our conclusion is that we encourage more Q studies with young children where statements are exchanged with visual images.

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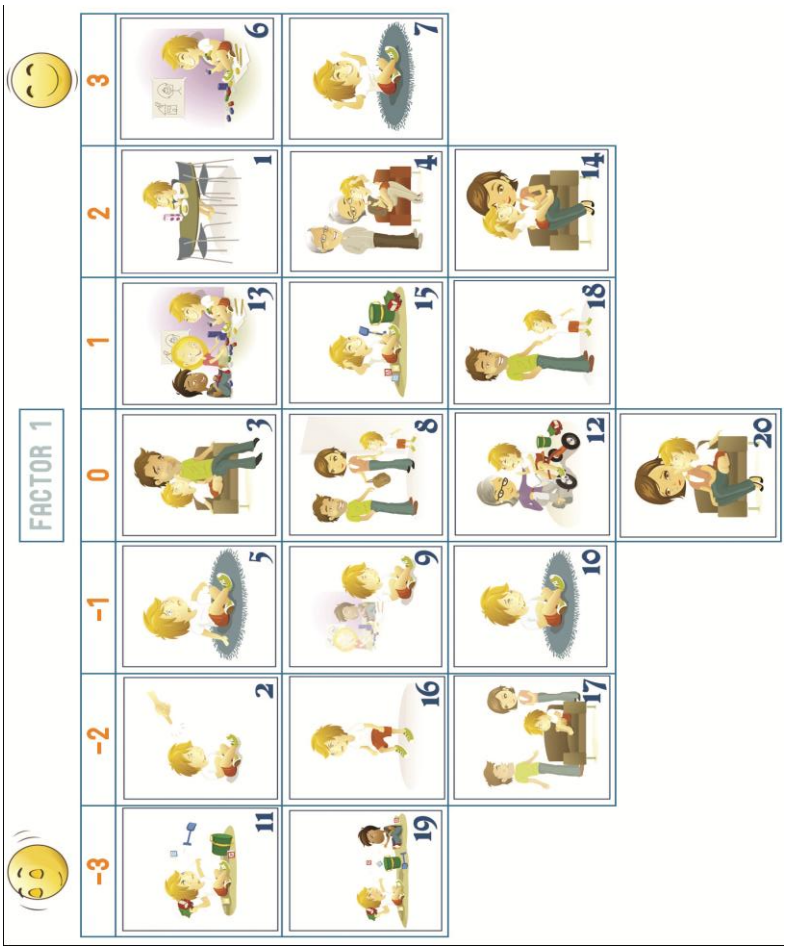
Appendix 1: Factor 1

(Note: numbers have been enlarged for the illustration.)



Appendix 2: Factor 2

(Note: numbers have been enlarged for the illustration).